

Service Manual

Radio Cassette

RQ-V162

Stereo Radio Cassette Player



Color

(K)..... Black Type

Area

Country Code	Areas	Color
[E]	Continental Europe.	(K)
[EG]	F.R. Germany / Italy.	

■ SPECIFICATIONS

General:

Power Requirement: Battery; 3V (Two "AA" size, R6/LR6 batteries)

AC; with optional Panasonic
AC adaptor RP-AC33

Power Output: 40mW (20mWx2)…RMS (max.)

Input: DC IN; 3V (⊖⊕)

Output: Headphones; 20Ω, φ3.5

Dimensions: 87.8(W)x121(H)x34.6(D)mm

Weight: 246g without batteries

Radio Section:

Radio Frequency Range: FM 87.5~108MHz
AM 520~1610kHz

Intermediate Frequency: FM 10.7MHz
AM 459kHz

Sensitivity: FM 2.5µV/0.5mW output
(-3dB Limit, Sens)
AM: 120µV/m/0.5mW output

Tape Deck Section:

Frequency Response: 50~14,000Hz (Normal, CrO₂/Metal)

Tape Speed: 4.8cm/s

Program Time: 1 hour with C-60 cassette tape

Track System: 4-track, 2-channel, stereo playback

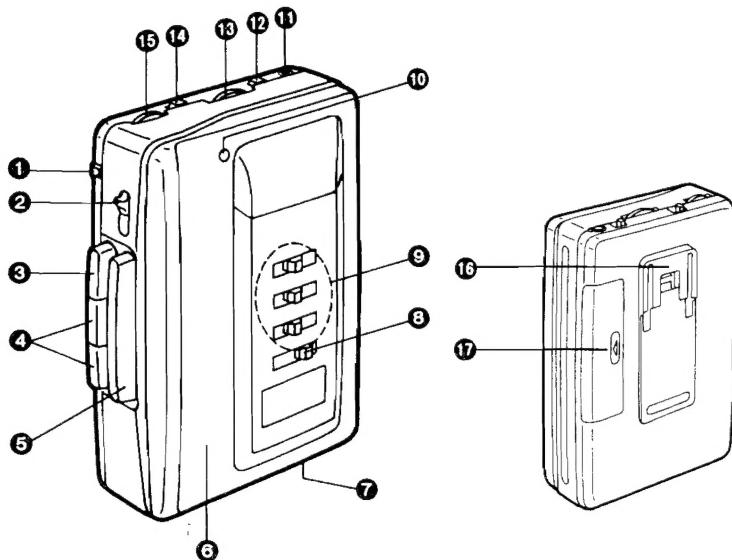
Notes:

- Weights and dimensions shown are approximate.
- Design and specifications are subject to change without notice.

Panasonic

4050

■ LOCATION OF CONTROLS



*Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

- ① Function selector (SELECTOR) [FM / AM / TAPE OFF] Turn this selector to select the sound source.
- ② Direction selector (DIR) [FWD / REV] Turn this selector to select the playback side of the tape.
- ③ Stop button (STOP/■)
- ④ Fast buttons (FAST/◀◀・▶▶) Press one of these buttons to fast forward or rewind the tape.
- ⑤ Playback button (PLAY/◀▶) Press this button to playback a tape.
- ⑥ Cassette compartment cover
- ⑦ DC input jack (DC IN 3 V)
- ⑧ XBS level control (XBS LEVEL)
- ⑨ Graphic equalizer controls [300Hz / 1kHz / 10kHz]
- ⑩ FM stereo indicator (FM STEREO)
- ⑪ Headphones jack () [20Ω, φ3.5]
- ⑫ Dolby noise reduction switch (DOLBY NR) [OFF / ON]
- ⑬ Tuning control (TUNING)
- ⑭ Tape/FM sensitivity selector (TAPE / FM SENS) [NOR / DX, CrO₂ MTL / LOCAL] When FM broadcast reception, this is helpful for receiving FM broadcast clearly. When tape playback, select the playback tape type. (normal, CrO₂, or Metal type)
- ⑮ Volume control (VOLUME)
- ⑯ Belt clip receptacle
- ⑰ Battery compartment cover

■ DISASSEMBLY INSTRUCTIONS

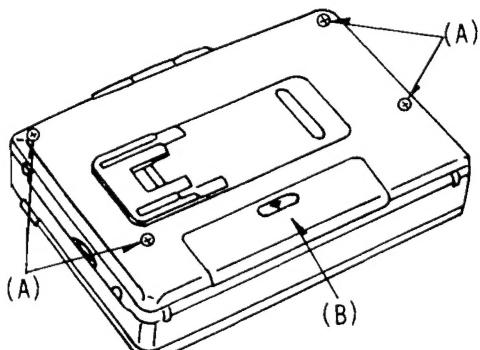


Fig. 1

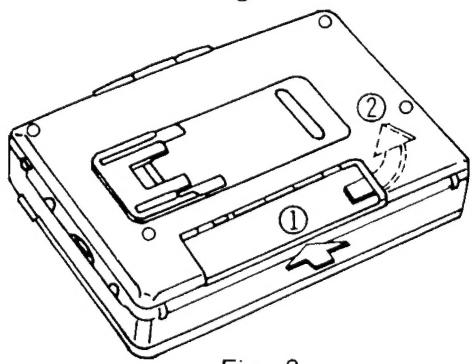


Fig. 2

● Removal of the Rear Cabinet

1. Remove the screws (A) (2×10)mm×4
2. Open the battery cover (B) ×1
3. Remove the rear cabinet in the direction of arrow (1) & (2).

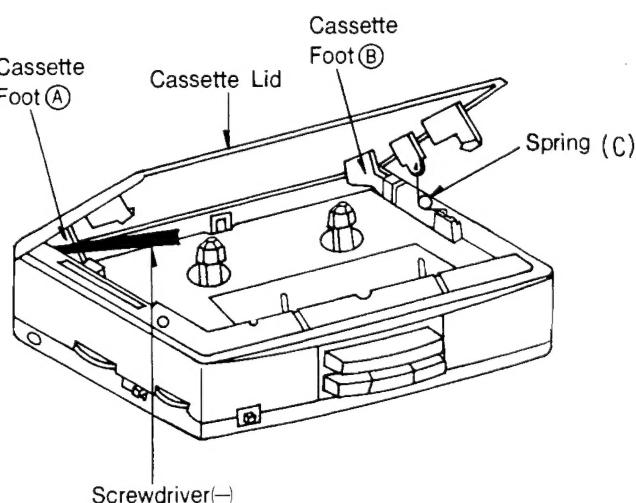


Fig. 3

● How to Removal of the Cassette Lid

Note: Be careful not to break cassette foot (A) and (B) when removing the cassette lid.

1. Open the cassette lid.
2. With a screwdriver, push cassette foot (A) to the right as shown in Fig. 3, and then pull out the right side of the cassette lid.
3. Push cassette foot (B) to the left and then pull out the cassette lid.
4. Remove the spring. (C) ×1.

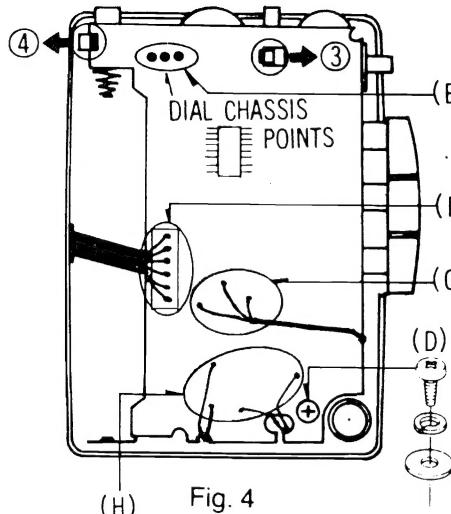


Fig. 4

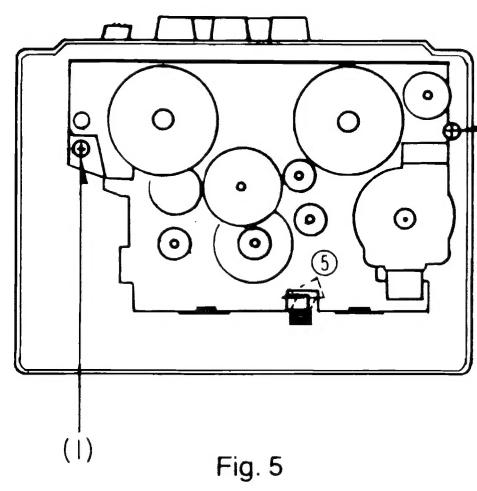


Fig. 5

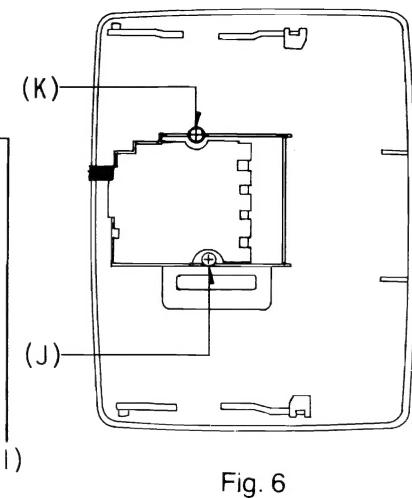


Fig. 6

● Removal of the Dial Chassis and Circuit Board (Fig. 4).

1. Remove the chassis screw (D) (2×16)mm \times 1.
2. Disconnect the solder (E).
3. Remove the dial chassis in the direction of arrow ③, ④.
4. Remove the solder (F), (G), (H) from flexible P.C.B.

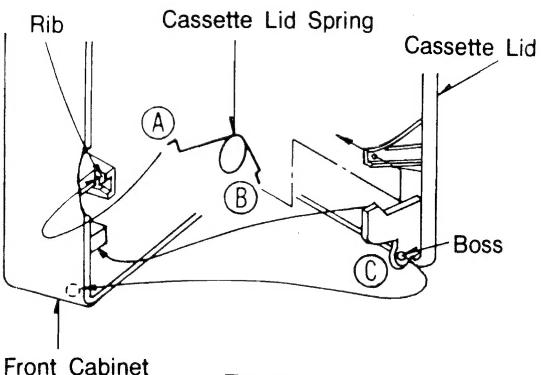
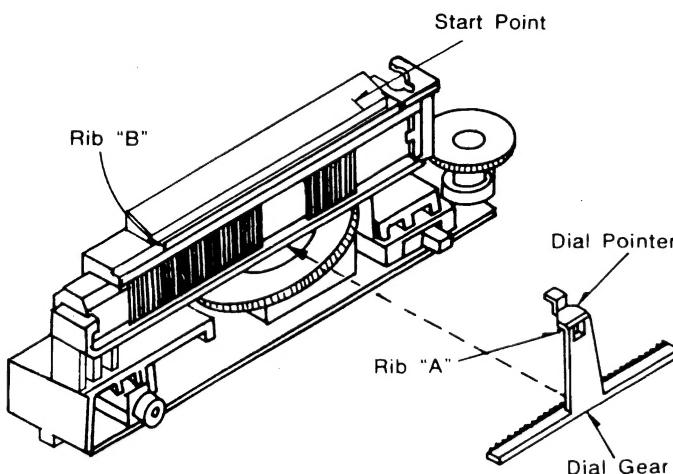


Fig. 7

● TO Removal of Tuning Gear



1. Firstable turn the tuning shaft of the variable capacitor counter clockwise, to the end.
2. Second, before pointer be installed on chassis, pointer must be setted as shown.
3. Thire to in stalle pointer, inserted pointer by rib "A" to rib "B" of chassis.
4. Set the dial pointer to start point.

MEASUREMENTS AND ADJUSTMENTS

● ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set band selector switch to AM or FM.
3. Set band selector switch to radio or tape.
4. Set Tape Selector Switch to normal.
5. Set power source voltage to 3.0V DC.
6. Output of signal generator should not be higher than necessary to obtain an output reading.
7. Make sure heads are clean.
8. Make sure capstan and pinch roller are clean.

● TUNER SECTION AM ADJUSTMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
AM-IF ALIGNMENT						
(1) AM	Fashion a loop of several turns of wire and radiate the signal into the loop antenna of the receiver.	459kHz 30% Mod. at 400 Hz	Point of non-interference. (on/about 600 kHz)	Headphones Jack (20Ω) <small>(Fabricate the plug as shown in Fig. 3, and then connect the lead wires of the plug to the measuring instrument.)</small>	T1 (AM IFT)	Adjust for maximum output.
AM-RF ALIGNMENT						
(2) AM	"	511kHz...[E] only 516kHz...[EG] only	Tuning capacitor fully closed.	"	L2 (AM OSC Coil)	Adjust for maximum output.
(3) AM	"	1650kHz...[E] only 1635kHz...[EG] only	Tuning capacitor fully open.	"	CT3 (AM OSC Trimmer)	"
(4) AM	"	550kHz	Tune to signal.	"	(*1) L1 (AM ANT Coil)	Adjust for maximum output. Adjust L1 by moving coil bobbin along ferrite core.
(5) AM	"	1,500kHz	"	"	CT4 (AM ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5).

(*1) Fix antenna coil with wax after completing alignment.

FM ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
FM-RF ALIGNMENT						
(1) FM		86.2MHz...[E] only 87.4MHz...[EG] only	Variable capacitor fully closed.	Headphones Jack (20Ω)	L4 (FM OSC Coil)	(*2) Adjust for maximum output.
(2) FM	Connect to test point ▲ through FM dummy antenna. Negative side to test point	109.3MHz...[E] only 108.35MHz...[EG] only	Variable capacitor fully open.	<small>(Fabricate the plug as shown in Fig. 3, and then connect the lead wires of the plug to the measuring instrument.)</small>	CT1 (FM OSC Trimmer)	"
(3) FM		90MHz	Tune to signal.	L3 (FM ANT Coil)	"	
(4) FM		106MHz	"	CT2 (FM ANT Trimmer)	(*2) Adjust for maximum output. Repeat steps (3)~(6).	

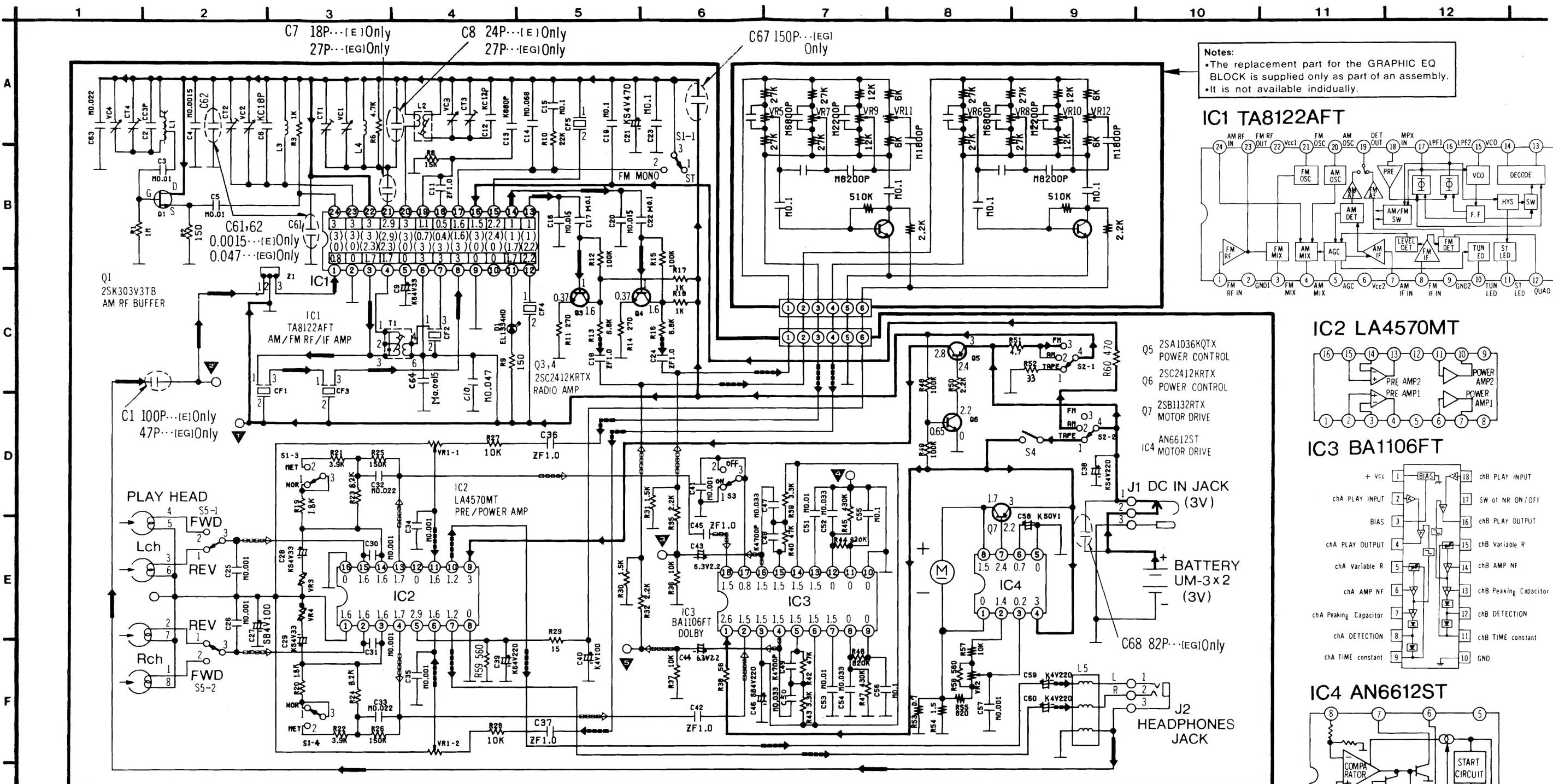
(*2) Three output responses will be present; proper tuning is the center frequency.

● TAPE DECK SECTION

ITEM	INPUT	MEASUREMENT POINT	ADJUSTMENT	PROCEDURE
Azimuth	QZZCFM (8kHz, -20dB)	Headphones Jack (20Ω) <small>(Fabricate the plug as shown in Fig. 3, and then connect the lead wires of the plug to the measuring instrument.)</small>	Azimuth adjustment screw (Refer to Fig. 2)	Adjust the azimuth adjustment screw during repeated forward and reverse playback to obtain the maximum head azimuth alignment with both channels equal. Then screw-lock the adjustment in place.
Tape speed	QZZCWAT (3kHz, -10 dB)	VR2 (Refer to Fig. 1)	Playback the central part of the tape and adjust VR2 so that the tape speed is as follows. 3000 ± 60Hz (Forward & Reverse)	

RQ-V162 RQ-V162

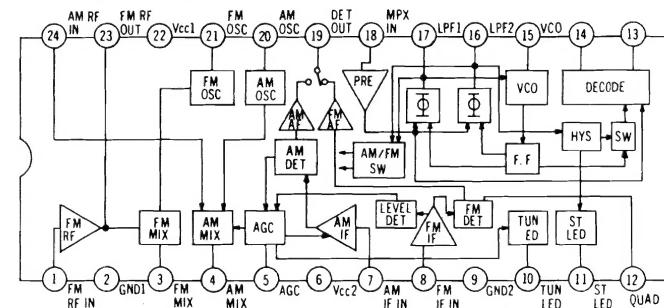
SCHEMATIC DIAGRAM



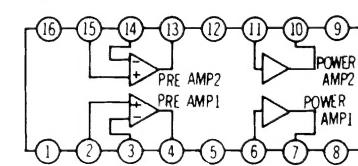
Notes:

- The replacement part for the GRAPHIC EQ BLOCK is supplied only as part of an assembly.
- It is not available individually.

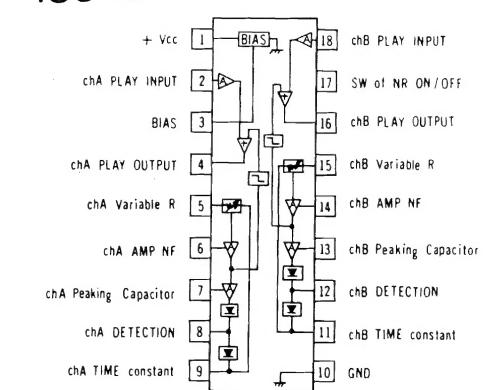
IC1 TA8122AFT



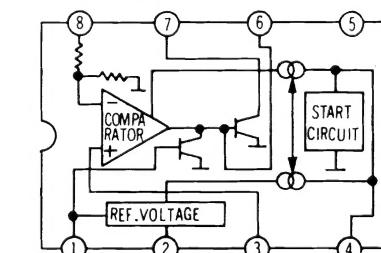
IC2 LA4570MT



IC3 BA1106FT



IC4 AN6612ST



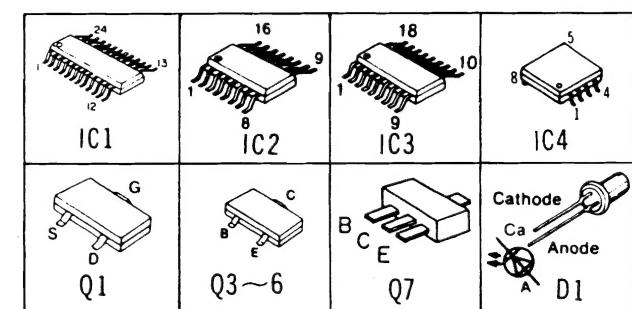
Notes:

- S1-1, S1-3 : FM sensitivity/TAPE select switch in "DX/NOR" position.
(1...DX/NOR, 2...LOCAL/CrO₂ MTL)
- S2-1 ~ S2-2 : Function switch in "TAPE" position.
(1...TAPE, 2...AM, 3...FM)
- S3 : Dolby NR switch in "ON" position.
(1...ON, 2...OFF)
- S4 : Motor switch in "OFF" position.
- S5-1, S5-2 : FWD/REV select switch in "REV" position.
(1...REV, 2...FWD)
- VR1-1 : Volume control VR (Lch)
VR1-2 : Volume control VR (Rch)
VR2 : Tape speed adjustment.

- VR3 : Playback gain adjustment VR (Lch)
- VR4 : Playback gain adjustment VR (Rch)
- VR5 ~ 12 : Graphic Equalizer VR (XBS/330Hz/1kHz/10kHz)
- XBS
330Hz
1kHz
10kHz
- The mark (▼) shows test point e.g. ▼=test point 1.
- DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
- FM position, ()...AM position.
No mark....Playback position.

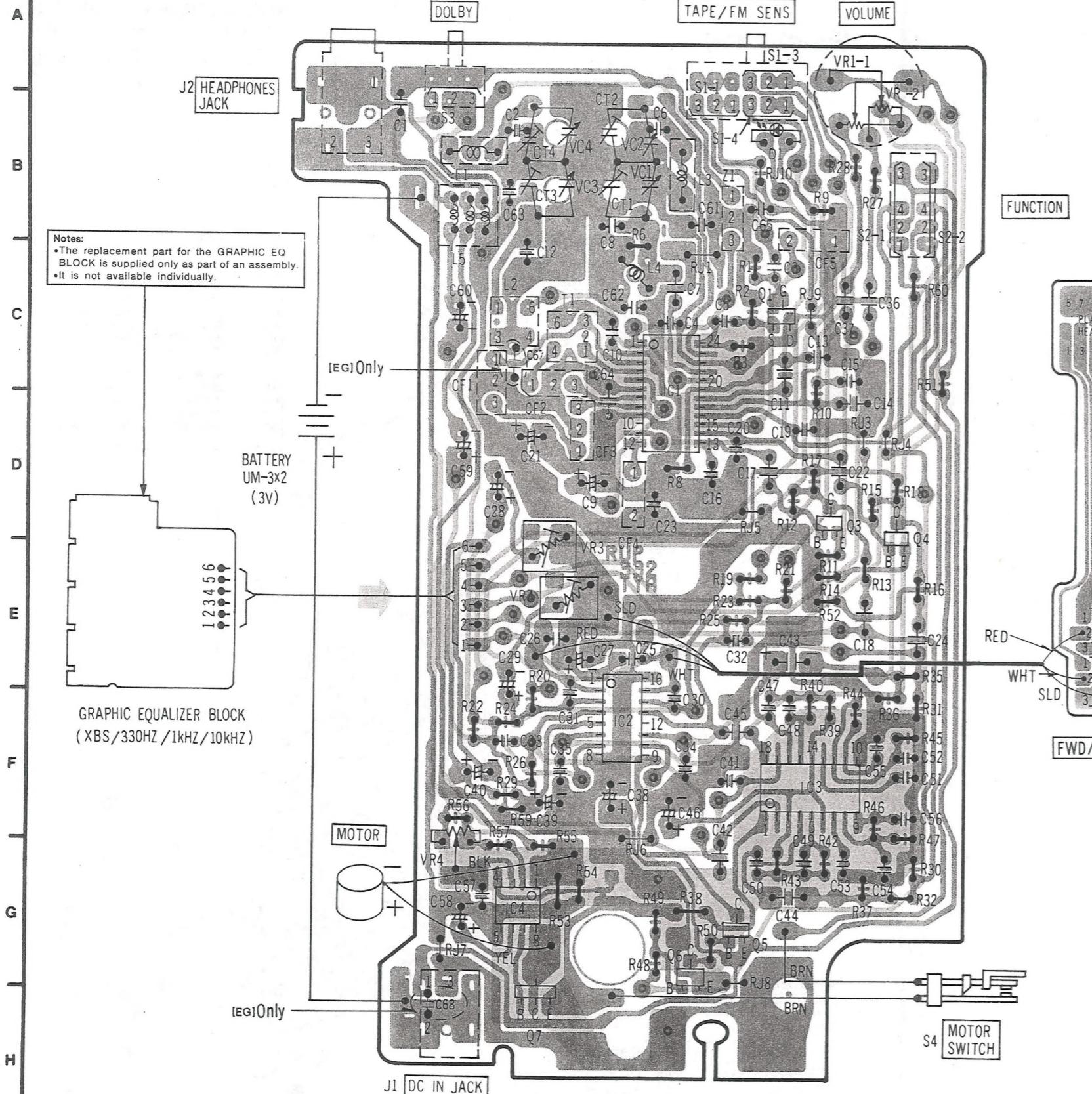
- Battery current
Volume minimum output (Radio).....27mA
Volume maximum output (Radio).....40mA
Volume minimum output (Tape).....160mA
Volume maximum output (Tape).....180mA
(Radio, 74dB 30% Modulation
Tape, 315 Hz 0dB tape playback)

- +B Voltage Line.
- Playback Signal.
- FM Signal.
- Playback and Radio Signal.



CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

1 1 2 1 3 1 4 1 5 1 6 1 7



REPLACEMENT PARTS LIST

Indicates parts that are supplied by TAMACO.

Ref. No.	Parts No.	Parts Name & Description
INTEGRATED CIRCUIT, TRANSISTORS AND DIODES		
IC1	TA8122AFT	I.C. AM/FM RF/IF AMP
IC2	LA4570MT	I.C. PRE/POWER AMP
IC3	BA1106FT	I.C. DOLBY
IC4	AN6612ST	I.C. MOTOR SPEED
Q1	2SK303V3TB	F.E.T.
Q3,4,6	2SC2412KRTX	Transistor
Q5	2SA1036KQTX	Transistor
Q7	2SB1132RTX	Transistor
D1	EL1334HD	L.E.D.
COILS AND TRANSFORMERS		
L1	RSA003TZA	Ferrite Bar Antenna Ass'y With (Antenna Holder)
L2	RLO2A010-M	Oscillator Coil AM
L3	RLO4Y15-2	Antenna Coil FM
L4 [E]	RLO4Y19-4	Oscillator Coil FM
L4 [EG]	RLO4A001-Z	Oscillator Coil FM
L5	RLQZ010K-M	RF. Choke Coil
T1	RLI2A37M-M	I.F.T. AM
VARIABLE RESISTOR		
VR1	RVV2H3A14-A	V.R. Volume Control
VR2,3,	RRN3A01B13WA	V.R. Playback/Gain /Motor Speed
4		
VARIABLE CAPACITOR		
VC1~4	RCV4LCT6R-M	Tuning Capacitor. W/Trimmer Capacitor (CT1~4)
CERAMIC FILTER		
CF1,3	RLFFEHWLZ01D	Ceramic Filter FM
CF2	RVFPFA459A	Ceramic Filter AM
CF4	RLDFHZ01D	Ceramic Filter FM
CF5	RSXZ456KM05	Ceramic Filter FM
COMPONENT COMBINATION		
Z1	RCRBMT001-H	Component Combination
SWITCHES		
S1	RSS2D25ZA-Q	SW, TAPE/FM, SEN
S2	ESD11H230	SW, FUNCTION
S3	RSS2B54VA-Q	SW, DOLBY
S4	RFA89ZA	SW, MOTOR
S5	RFA90ZA	SW, FWD/REV
JACKS		
J1	RJJ4301	DC IN Jack
J2	RJJD3S5ZB-C	Headphones Jack
GRAPHIC EQUALIZER		
E1	EUWS1UPC1BC5	Graphic EQ Ass'y

NOTES:

BLK	Black	ORG	Orange
BLU	Blue	PNK	Pink
BRN	Brown	RED	Red
GRY	Gray	SLD	Shield Wire
GRN	Green	VLT	Violet
L. BLU	Light Blue	WHT	White
NIL	No Color Mark	YEL	Yellow

Notes:

- The circuit shown in () on the conductor indicates printed circuit on the back side of the printed circuit board.
 - The circuit shown in () on the conductor indicates printed circuit on the front side of the printed circuit board.
 - The symbols () shown in the circuit board indicate connection points between conductors on the front side and back side of the circuit board.
 - : Chip resistor
 - : Chip jumper
- *This circuit board diagram may be modified at any time with the development of new technology.

RESISTORS & CAPACITORS PARTS LIST

Indicates parts that are supplied by TAMACO.

Ref. No.	Parts No.	Ref. No.	Parts No.
RESISTORS		CAPACITORS	
R1	ERJ6GEYJ105	C1[E]	ECUX1H101KD
R2,9	ERJ6GEYJ151	C1[EG]	ECUX1H470KCD
R3,17,18	ERJ6GEYJ102V	C2	ECUX1H030CC
R6	ERJ6GEYJ472V	C3,5,51,53	ECUX1E103MD
R8	ERJ6GEYJ153V	C4,64	ECUX1H152MB
R56,59	ERJ6GEYJ561V	C6	ECUX1H180KCN
R10	ERJ6GEYJ223V	C7 [E]	ECUX1H180KCM
R11,14	ERJ6GEYJ271V	C7 [EG]	ECUX1H270JCD
R12,15,48,	ERJ6GEYJ104V	C8 [E]	ECUX1H240JCN
49	ERJ6GEYJ182V	C8 [EG]	ECUX1H270JC
R19,20	ERJ6GEYJ682V	C9,28,29	ECUA0GKS330
R13,16	ERJ6GEYJ392V	C10	ECUX1C473MB
R21,22	ERJ6GEYJ322V	C11,18,24,	ECUX1C105ZFM
R23,24	ERJ6GEYJ822V	36,37,42,45	
R25,26	ERJ6GEYJ154V	C12	ECUX1H120KCD
R27,28,36,	ERJ6GEYJ103V	C13	ECUX1H681KB
37,57		C14	ECUX1C683MD
R29	ERJ6GEYJ150V	C15,19,23,	ECUX1C104MBM
R30,31	ERJ6GEYJ152V	55,56	
R32,35,50	ERJ6GEYJ222V	C16,20	ECUX1C153MD
R38	ERJ6GEYJ560V	C17,22	ECUX1C04MBM
R39,43	ERJ6GEYJ332V	C21	ECEAOGKS471
R40,42	ERJ6GEYJ473	C25,26,30,	ECUX1C23MB
R44,46	ERJ6GEYJ824	31,34,35,	ECEAOGSB101
R45,47	ERJ6GEYJ434V	41,57	ECUX1C223MB
R51	ERJ6GEYJ4R7V	C27	
R52	ERJ6GEYJ330V	C32,33,63	
R53	ERSL39JR70U	C38,39	ECEAOGKS221
R54	ERJ6GEYJ1R5V	C40	ECEAOGK101
R55	ERJ6GEYJ821	C43,44	ECST0JA225RR
R60	ERJ6GEYJ471	C46	ECEAOGB221
CHIP JUMPERS		C47,50,52,	ECUC1C33MB
RJ1,6	ERJ6GEY0R00V	54	
RJ3~5	ERJ6GEY0R00	C48,49	ECUX1H472MB
7~10		C58	ECEA1HK010
		C59,60	ECEAOGK221
		C61,62	ECUX1H152MB
		[EG]	ECUX1C473MB
		C67	ECUX1H151K
		[EG]	ECUX1H820KCD

■ MECHANISM PARTS LOCATION

ITEM	INPUT	MEASUREMENT POINT	ADJUSTMENT	PROCEDURE
Playback gain	QZZCFM (315 Hz, 0dB)	▲(+)L-CH ▼(+)R-CH	VR3 (L-CH) VR4 (R-CH) (Refer to Fig. 6.)	Playback any part of the tape and adjust VR3 and VR4 so that the playback gain is $70 \pm 8\text{mV}$.

● ALIGNMENT POINTS

Please refer to the Circuit Board and Wiring Connection Diagram to locate the test points.

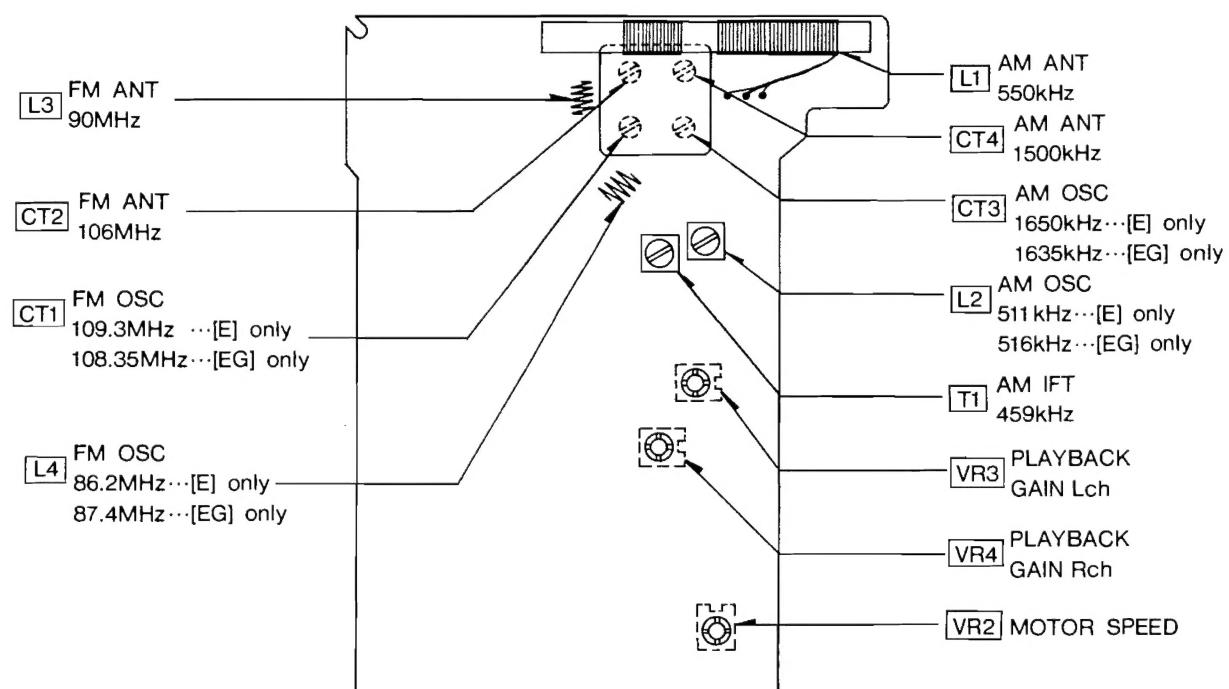


Fig. 1

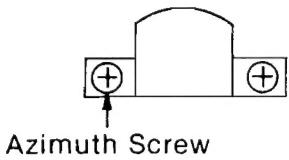


Fig. 2

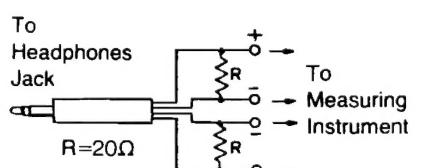
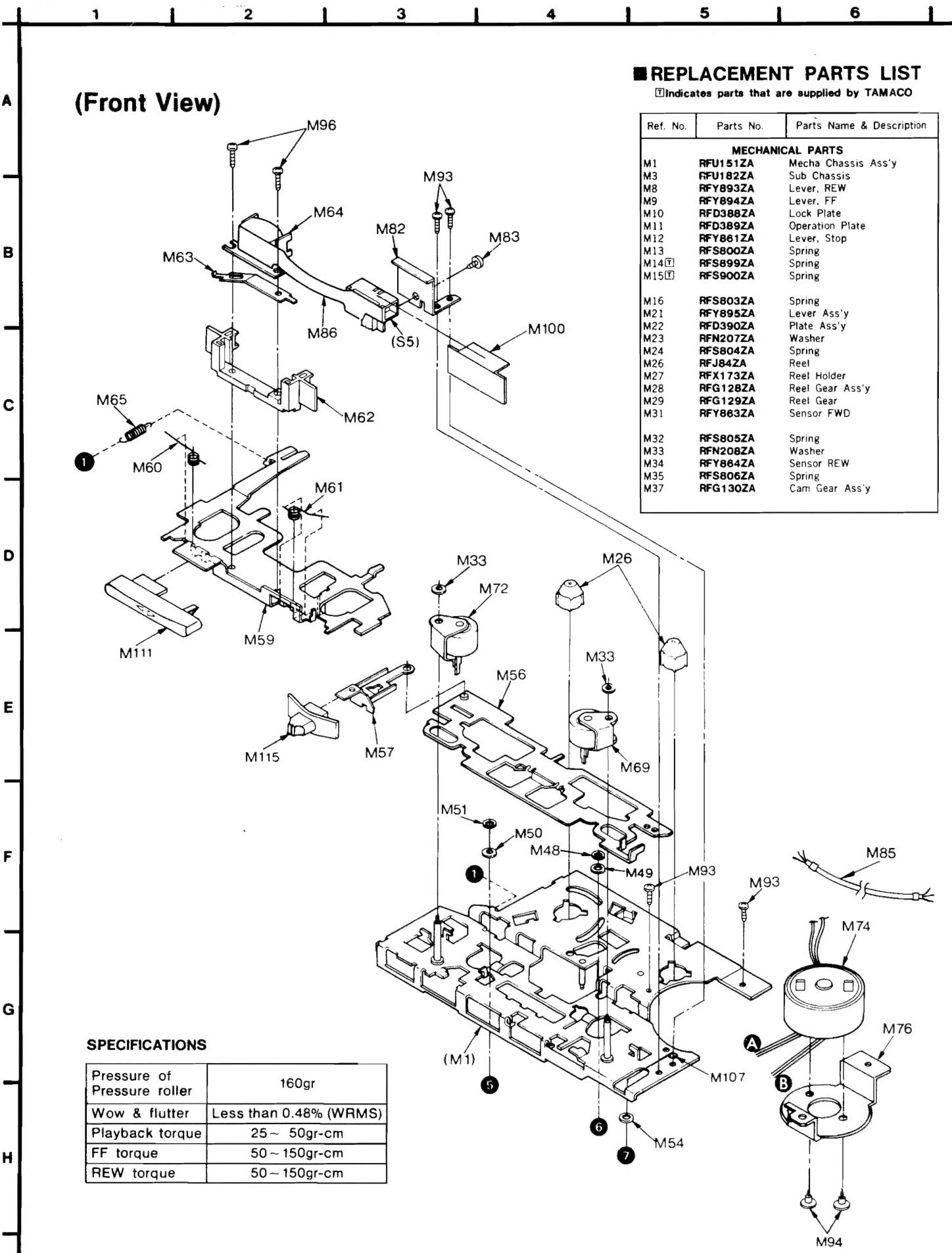


Fig. 3



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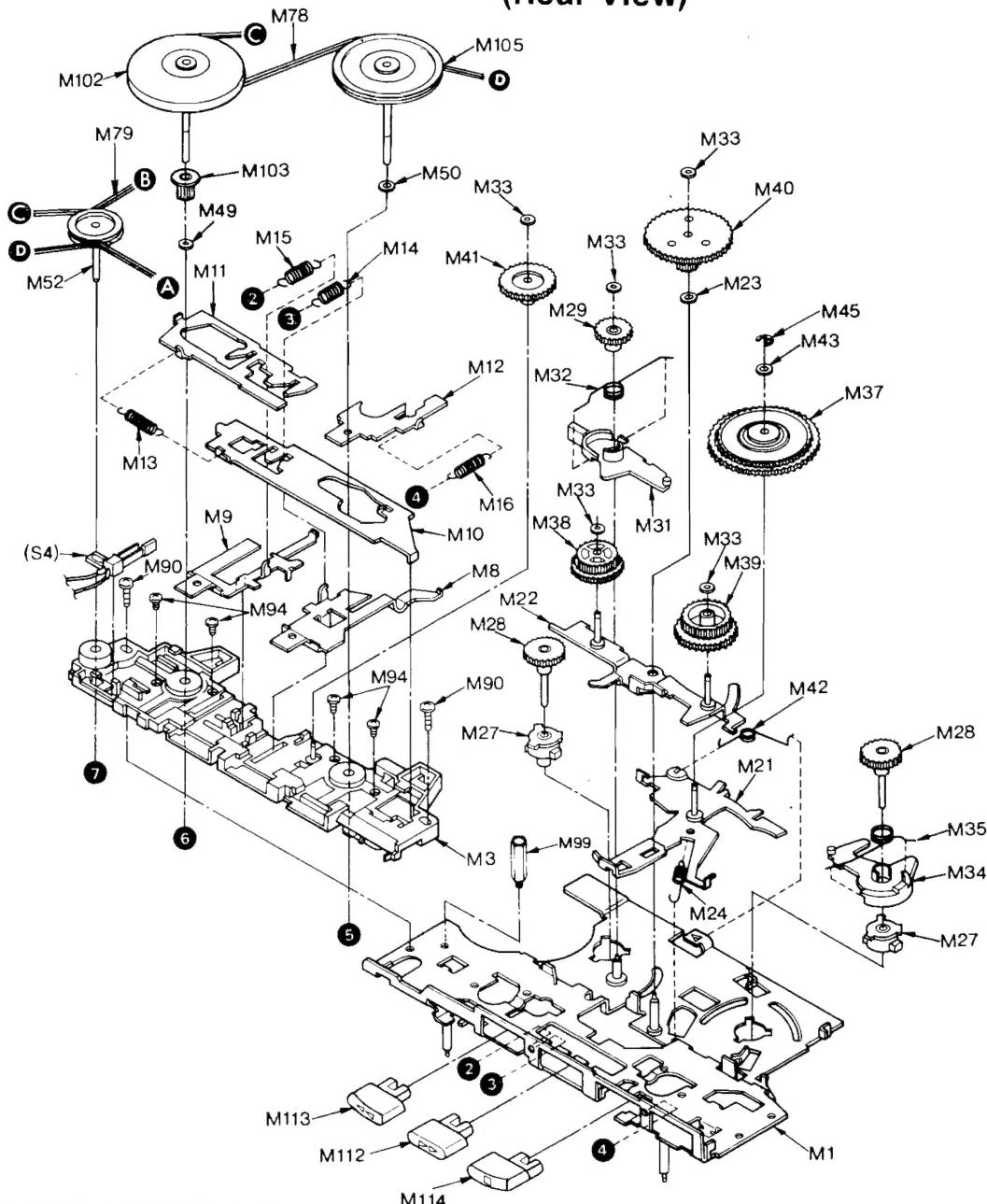
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12

(Rear View)

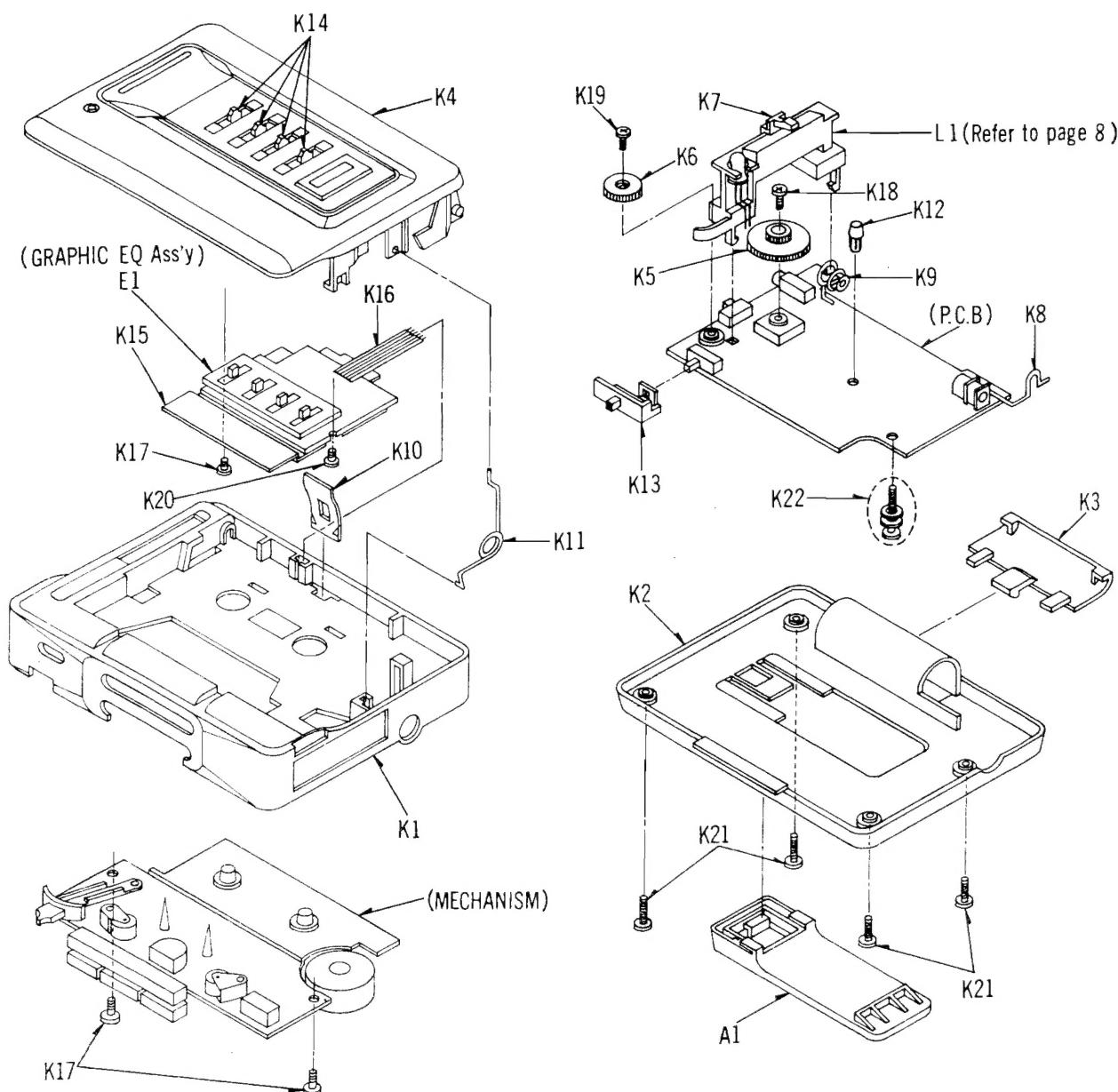


■ REPLACEMENT PARTS LIST

□ Indicates parts that are supplied by TAMACO.

Ref. No.	Parts No.	Parts Name & Description	Ref. No.	Parts No.	Parts Name & Description	Ref. No.	Parts No.	Parts Name & Description
M38	RFG131ZA	Gear, FF	M60	RFS901ZA	Spring	M90	RFE492ZA	Screw
M39	RFG132ZA	Gear, REW	M61	RFS902ZA	Spring	M93	RFE491ZA	Screw
M40	RFG133ZA	Gear, Center A	M62	RFE489ZA	Tape Guide	M94	RFE494ZA	Screw
M41	RFG134ZA	Gear, Center B	M63	RFS810ZA	Spring	M96	RFE495ZA	Screw
M42	RFS832ZA	Spring Turn	M64	RBR4CM002F	Head	M99	RFD433ZA	Shaft
M43	RFE520ZA	Washer	M65	RFS811ZA	Spring	M100	RMC239TZA	RMC Shield
M45	RFE521ZA	E-Ring	M69	RFR55ZA	Pinch Roller F Ass'y	M102	RFF80ZA	Flywheel Ass'y
M48	RFN218ZA	Washer	M72	RFR56ZA	Pinch Roller R Ass'y	M103	RFG152ZA	Gear
M49	RFN220ZA	Washer	M74	RFM178ZA	Motor Ass'y	M105	RFF81ZA	Flywheel Ass'y
M50	RFN221ZA	Washer	M76	RFD427ZA	Motor Bracket	M107	RFS903ZA	Spring
M51	RFN219ZA	Washer	M78	RFB116ZA	Belt	M111	RBC308TZA	Button, Play
M52	RFQ68ZA	Pulley, Center	M79	RFB113ZA	Belt	M112	RBC309TZA	Button, FF
M54	RFN215ZA	Washer	M82	RFD394ZA	SW Bracket	M113	RBC310TZA	Button, REW
M56	RFD391ZA	Slide Plate	M83	RFE490ZA	Screw	M114	RBC311TZA	Button, Stop
M57	RFY665ZA	Lever Direction	M85	RFE536ZA	Wire Ass'y	M115	RBS207TZA	Direction Knob
M59	RFU153ZA	Head Chassis	M86	RFT28ZA	F.P.C.			

■ CABINET PARTS LOCATION



■ REPLACEMENT PARTS LIST

□ Indicates parts that are supplied by TAMACO

Ref. No.	Parts No.	Parts Name & Description	Ref. No.	Parts No.	Parts Name & Description
CABINET PARTS					
K1□[E]	RKM284TVA	Front Cabinet	K16□	WBE6AH	6P Wire
K1□[EG]	RKM284TTA	Front Cabinet	K17□	RHD003TZA	Screw
K2□[E]	RKF269TWA71	Rear Cabinet	K18□	XSH17+3	Screw
K2□[EG]	RKF269TSA71	Rear Cabinet	K19□	XSH14+4	Screw
K3□	RKK234TZA71	Battery Cover	K20□	XTNR14+3.5CF	Screw
K4□	RYQQV162EKT	Cassette Cover Ass'y	K21	XTNR2+10CFZ	Screw
K5□	RBT255TZA	Knob Tuning	K22□	XYN17+F5FN	Screw
K6□	RBT256TZA	Knob Volume			
K7□	RDP247TZA	Pointer			
K8□	RJC298TZA	Battery Terminal (+)			
K9□	RJC299TZA	Battery Terminal (-)			
K10□	RUS262TZA	Tape Spring			
K11□	RUS263TYA	Cassette Cover Spring			
K12□	RHR284TZA	Supporter			
K13□	RBD249TYB	Tape Selector Knob			
K14□	RBD244TZA	EQ Knob			
K15□	RMX223TZA	EQ PVC Sheet			
ACCESSORY					
	RKE210TZA-1	Belt Clipper			
	RP-HT106PY	Headphones			
	RQX862TZA	Instruction Manual			
PACKING MATERIALS					
	RPN1471TZA	Blister (Front)			
	RPN1472TZA	Blister (Rear)			
	RPK530TZA	Carton Box			
	RPP424TZA	Polyethylene Cover			